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# **Education Attainment, Further Female Participation & Feminization of Labor Markets in Arab Countries**

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## **Abstract**

The feminization of labor markets through the role of education is among the means that enhances the participation of women to development and ensures further involvement of human resources in the growth and development processes. While this is a process that is highly pursued in most developed economies, it is not clearly seen to be pervasive in most developing countries. The Arab economies are among those countries where lower participation of women is observed but where education is an important driver for further feminization of labor markets. These issues are discussed in the present chapter to underline the role of education in Arab economies in expanding further participation of human resources to local labor markets in these economies.

**Keywords:** Labor markets, feminization, school attainment, skilled labor.

## **Introduction**

The feminization of labor markets through the role of education is among the means that enhances the participation of women to development and ensures further involvement of human resources in the growth and development processes. While this is a process that is highly pursued in most developed economies, it is not clearly seen to be pervasive in most developing countries. The Arab economies are among those countries where lower participation of women is observed but where education can be an important driver for further female participation and feminization of labor markets.

One of the main determinants for obtaining a specific job nowadays is one's educational level. Therefore to study the workforce characteristics, one needs to start by taking a look at education. For a long time, accessing school has been an issue in the Arab world. This is even harder for girls where opportunities for staying in school are often constrained by series of household, social and individual constraints. Girls have particularly suffered from this issue and efforts have been made to overcome it

(Sika, 2011). This higher emphasis on females' participation in education at all levels has led to a new phenomenon of feminization of the labor markets, mainly in places and locations that are not commonly having women.

Feminization is the new term for the growing contribution of females in the job market in the past decades. Standing (1999) was the first one to look into this phenomenon in the late twentieth century in global economy. The author detected that "the pattern of employment tends to result in an increasing proportion of women occupying the jobs" (p. 583). However, the Arab world was not studied separately in this research and may present different conclusions than Standing's. This paper aims to first develop a theoretical model that would link feminization of the job market from the first stages of education. Second, it will identify the trends of females' education in the past years to support the underlying assumptions the model will be based on. Next, it will tackle the empirical methods used to match statistics in the Arab world to the theory discussed. Finally, the empirical analysis will test the hypothesis that explains how feminization of labor in the Arab world is achieved.

## **I. Literature review**

It took several years of governments' initiatives and efforts to insert girls in the modern schooling system of Arab countries. This is well expressed when analyzing Barro and Lee databases (2010) where the average years of schooling of females has been increasing over the 1950-2010 period. This trend has been concerning primary, secondary and tertiary education of females. These data show also a decreasing gender gap but this is still present even under these major changes. The tables of chapter 2 of the present book, indicating time trends for total and for females illustrate clearly the increasing pattern of schooling progress among females in Arab countries. But, the speed of change appears to be lower than the one prevailing in Eastern and Central European Economies. More efforts are consequently needed from Arab countries with series of initiatives developed to include more women in education.

The article "The Millennium Development Goals: Prospects for Gender Equality in the Arab World" by Nadine Sika (2011) provides evidence for the lower access to schooling faced by Arab girls. It states numbers for illiteracy rates of females and males in the Arab World with the tendency of higher illiteracy rate for females. The article discusses the emergence of girls' schools with their assumed role

in education. Another interesting point that this article raises is that accessing schools is harder for girls due to implicit legal and social practices. Moreover, the author provides support to the premise of women's increasing relatively higher performance in the educational system. However, these high potential shown by females in school, do not appear to be translated significantly in more positions in the job market. These trends are clearly indicated by the existing data on unemployment by gender throughout the Arab economies as reported by International Labor Organization (ILO, 2009) and World bank databases.

Even with higher school enrollment rates, Arab countries still need to tackle the dropout problem. The Dubai school inspection bureau annual report (2010) presents statistics for enrollment and dropout rates in Dubai for the past years. Then it moves to a case-by-case analysis for private, public, and language school. It assesses the performance of the country's school system and the evolution of its education. This report comes after two rounds of school inspections the bureau went through. Therefore, it shades the light on the changes that they have undergone. Finally, it comes up with a set of recommendations for these schools based on their performance in the past year.

This gender discrepancy is not the same throughout all the Arab states. Afiouni and Karam (2013) explain how Arab countries do not share the same level of macro factors. Such factors include GDP growth, Human Development Index (HDI), fertility and annual population growth. However, levels of gender gap in the Arab countries seem to be some of the highest in the world. This gap is more noticeable in political and economic participations and a little less in education. The reasons behind this discrepancy differ but a common factor is the discrimination in laws or their enforcement. Next, the authors discuss other socioeconomic factors leading to this gender gap throughout the region. They then provide a study on how human resources (HR) policies affect women's participation in universities. The authors concluded that encouraging women's involvement in higher education in the Arab region should start by revisiting HR policies.

Several Arab countries have already started working on policy-making in order to improve women's conditions in education. As an example, Chedati (2004) explains Morocco's strategy of reducing discrepancies between boys and girls at schools. In an article, he provides statistics of dropouts in different school levels by

gender through a series of years. He also shows how the ratio of girls accessing schooling has gone up in Morocco with a decrease in dropout rate. This implies less gender gap in Moroccan schools with the ministry taking measures to hopefully get rid of it. Last, the report compares the evolution of dropout rates in different regions of Morocco for successive school years with respect to the corresponding government expenditure. Even though this report was written eight years ago, most of these changes are still ongoing. Yamouri (2010), reports that the gender parity index has been improving and that programs are being developed to control for dropout rates and work on their diminution.

When provided with the same education, females do not show signs of inferiority with respect to males. An experiment conducted by Devine, Fawcett, Scucs, and Dowkers (2012) showed that there were no difference in math performance between girls and boys even though girls showed higher mathematic anxiety and test anxiety. Even more surprising, the authors state that gender performance is decreasing to non-existent in gender-equal countries (Devine et al., 2012). Therefore, when provided with equal learning opportunities, girls seem to perform as well as boys.

Performing more internationalized tests have also shown the same results. Meshawi (2012) discusses the Trends in International Mathematics and Science Study (TIMSS), a test performed on fourth grade (9 to 10 years) and eighth grade (14-15 years) children, in Egypt (2012). Results from this test in Egypt have shown that girls outperformed boys in 2007 while there was no significance of such difference in achievement in 2003. Furthermore, there is no significant difference in achievement whether the teacher is a male or a female (although there were 80% male math teachers). This reinforces the intuition that men and women are as skilled in mathematics. According to the results of this study, students in single-sex schools, on average, perform better in math and science than those in mixed schools (Meshawi, 2012). When looked at it for boys and girls separately, girls in single-sex school have better score than those in mixed schools. However, no significant difference is found for males in single-sex and mixed schools.

When differences are found between boys and girls performances, there is usually an inequality in some determining factors. Driouchi and Reiffers (2012) explain the gender gap in performance in math and sciences in North African countries with social factors such as family, political, and educational ones. Inequality

of opportunities is a major issue for students in the region making education for girls tougher. Nevertheless, according to the TIMSS (Trends in International Mathematics and Science Study), girls can do at least as well as boys in science and math in most countries. In some cases, girls even outperform boys in these fields. Hence, gender is not a determinant in students' performance in science. The problem of gender inequality in Arab countries is explained by poor educational system rather than gender gap in skills.

The increase in female school enrollment rates has also appeared in tertiary education. Jaramillo et al (2012) discuss higher education in the Arab region. The authors show the growing tertiary schooling of Arab students either locally or internationally. They first show the progress of local institutions in the private and public sector after Arab countries have realized the importance of quality education to obtain skilled workers. Then, they discuss the importance of internationalization of higher education and how Arab economies benefit from it. Arab countries send more students abroad than they receive international students in Arab institutions. The authors develop this further by stating percentages of students going abroad by country and major. Finally, they compare the yearly progression of international students from Arab countries.

Nonetheless, the domestic enrollment rates in higher education do not include students who go abroad. But, the percentage of female who travels to study in foreign institutions is still low compared to that percentage of male. During the conference on "Policy Making Opportunities in Business, Finance, and Human Resource Development in DC", Alkhalaf (2012) addresses issues about the Saudi students in the US and shows that 78% of those students who go abroad have a scholarship. The author provides information on how these scholarships are allocated and distributed among men and women. He shows that 24% of Saudi scholars around the world are female. In the USA, only 22% of total Saudi students are female implying that 78 % of the Saudi students in the USA, are male.

Graduating from a higher institution does not guarantee that Arab women participate in the job market or start their careers. Solovieva (2013) provides an insight on the struggles Arab women face after college in order to find a job. The author presents a testimonial of a young Egyptian graduate in her quest for work. The article also discusses how fewer opportunities are available for women in Egypt despite what politicians affirm. Statistics exhibit the low percentage of women in

executive positions in Egypt. The author examines the case of other Arab countries such as Jordan, Syria, and Saudi Arabia. In these Arab countries, women face barriers when trying to access the job market. Thus, the author presents different Arab governments' standpoints on women's unemployment and how each one deals with the issue.

These difficulties women face are not exclusive to young graduates. Mcloughlin (2013) presents all the constraints that females face in the job market. These difficulties can be legal, social, cultural and even economical. She outlines the sectors where women are mostly present and their economic role in Arab countries. Moreover, she identifies gender gap in participation, remuneration, and advancement providing evidence for each one. Finally, she discusses these issues across countries suggesting a set of policy recommendations to overcome them.

Women need to find a way to make their voices heard in their countries. The portrait of progress report, by the Office of the High Commissioner for Human Rights (2012), tackles the issue of women empowerment in the United Arab Emirates. It provides statistics on the rate of working women in the Emirates in both public and private sectors. Because participation in the workforce is tightly related to education, the article also reports statistics of women's participation in schools. Next, women in the workplace come with rights and organization. Therefore, the article shows how this is accomplished in the UAE through a set of examples.

What happens in the UAE is not a single occurrence. Many other Arab countries face women lack of empowerment in the job market. The Saudi Basic Industries Corporation and Booz & Company (2012) compare unemployment rates between men and women in the Arab World. It provides rates by nationality, age range, and education level. They discuss the role of large employers in creating job opportunities for both genders and how this affects the feminization of the labor market. Finally, they assess the role of education in the readiness of an individual to the job. They state the pros and cons of local tertiary education versus international degrees for men and women.

Arab women have different positions in the job market depending on the country they live in. Comparing between several Arab countries is interesting if one wants to further understand gender gap in the work life. In a report, the World Bank Middle East and North Africa Social and Economic Development Group (2010) describe the status of women across different countries of the Arab region. It shows

their participation in the workforce through the years sorted by income group. It also tackles the issue of women in education across different levels (primary, secondary, and tertiary). Taking it even further, it compares performance between genders. The authors also identify higher education graduates by field of studies. Statistics of women in parliament are also provided to show their participation in political life.

These official unemployment rates are missing a market that is prevalent in the Arab region: informal labor. Angel Urdinola and Tanabe (2012) identify the determinants of informal employment in the Arab region. They study the relationship between informality and genders as well as informality and education level. They associate informality with highly agricultural countries and detect patterns of informality through age. Lastly, they provide statistics and charts to illustrate how the informal sector varies from a country to another.

As for the relationship between education and women labor participation, it is unclear whether there is a linear or a U-shape type of association. Klasen and Pieters (2012) claim that female labor participation with respect to education level should be U shaped. The reason behind such a statement is that females with little or no education would work in some manual positions because of their need for money. Females with very advanced degrees can enforce their positions in society and work, despite the challenges they typically face, because of the high salaries associated with their status. Women in between these two groups would be the ones suffering from all the barriers females typically face and thus have lower participation rates than the other groups. The authors assert that this U shape is also present between female labor participation and economic status. They have succeeded in showing these trends in the past twenty years in India.

Because of the constraints women have to deal with in the workforce, several Arab countries are developing new strategies to evolve. A team of researchers at the World Bank (2012) explains the changes that the Arab region is undergoing in several fields. The Arab spring has raised concerns about the gender gap and countries are now listening to the people's wish. The report is discussing how women are integrating the job market gradually. More females go to schools but the claim of the article is that there is a paradox that they refer to as the Middle East and North Africa (MENA) paradox. The paradox is defined as the unbalance between the number of females graduating and the one joining the workforce. It sheds the lights on



inequalities between genders and how to overcome them through new reforms and actions.

These governments' efforts were not wasted and a progress is happening. Yamouri (2010) states the progress of countries in the Arab region in term of shrinking the gender gap in education and workforce. She stipulates the many constraints Arab females face in the business world, either the cultural or the legal ones, and how their condition has been improving in the past years. She also discusses the cases of Morocco, Jordan, West Bank and Gaza, and Egyptian women independently.

Looking at the high female unemployment rates in the Arab region, several authors have developed theories for the reasons why these rates do not match males' (See Appendix A for more details). The first argument that seems to prevail in most studies is the inequality of the legal environment, or in some cases, the lack of law enforcement (Yamouri, 2010). This environment makes resolving administrative issues much cumbersome for women than men leading to less female in entrepreneurship positions. In Egypt for instance, when going through the legal system, a woman would need on average 86 weeks to solve a disagreement while a man would only need 54 for the same matter (Yamouri, 2010). Entrepreneurship is also harder for women because of the difficulties they face when raising capital (McLoughlin, 2013). Lending policies are discriminatory in most Arab countries and therefore launching a business can be easier for men. Hence, we find fewer women leading enterprises than men in Arab countries.

Even if the Arab region seems to be more open and ideologically changing, it has a hard time overcoming some cultural perceptions. In Arab countries, for instance, the approval of women working when the husband can support the household is not systematic. Wives need their partners' consent to be able to work and even though more husbands accept to let them work, many are still reluctant. The cultural situation is evolving but needs time and effort (Yamouri, 2010). Cultural restrictions also include women's role in household duties (The World Bank, 2012). In Arab states, women's role in the domestic life is more traditional than in the rest of the world and the nature of the wife's job should fit the housework tasks. This cultural view is not altered by whether the woman actually holds a degree or not. While in Western societies women's professional lives are sacred and valued, Arab women are assessed

by the state of their houses before their career achievements. Henceforward, cultural norms restrict women from participating in the labor market.

The percentage of women participating in the workforce is too low to be explained by legal and cultural discrepancies only. This rate does not seem to represent the increase in female education at all levels. Therefore, there should be a segment of females who does not join the job life even after obtaining a degree. This assumption would hold if one does not take into account the informal sector. Informal employment is particularly high in the Arab region. Informal occupations are not exclusive to uneducated people but even employees with university education (Angel-Urdinola & Tanabe, 2012). A correlation analysis has shown that informality of work in Arab countries is highly correlated with being a woman (Angel-Urdinola & Tanabe, 2012). When comparing the percentage of women and the one of men working in the informal sector, the results are different from a country to another. More agricultural countries like Morocco have more female working in the informal sector. The same analysis has also shown the chances of working in the informal sector drop as the person's educational level goes up (Angel-Urdinola & Tanabe, 2012). More females reaching higher education should thus decrease their presence in the informal market.

As for other positions women prefer to hold, they are usually in the public sector. The reason for choosing the public sector over the private one is that it offers more flexible hours and is less demanding (McLoughlin, 2013). Most married women in Arab countries would only work in the public sector and some females quit their positions in the private segment once engaged or pregnant. Jobs in private companies are considered incompatible with wives' at-home duties. This decision to quit the job after getting married is related to another law: legal minimum age for marriage (The World Bank, 2012). This age is set to a particularly low level in the Arab region and delaying it would ensure married women to be more empowered in taking a decision to either pursue their studies or not to give up on their careers. Thus, most of the Arab women who work formally are concentrated in public administrations and this sector does not show signs of a significant growth (McLoughlin, 2013).

All these reasons that could explain why females have such a low labor participation rate despite the increase in their average years of education are amplified for young graduates (McLoughlin, 2013). These women face both the obstacles of being a female and the ones of being new in the job market. Other barriers that

researchers have found out were the difficulty to access information either through lack of technological means or through a deficiency in informing young female graduates (McLoughlin, 2013). One last reason behind female low participation rates is the poor transportation system in the Arab region and the little mobility women enjoy. Public transportations in these countries are unsafe and make it harder for women to move freely.

Most of the evidence emphasized above relates to the importance of education of females in relation to their participation in labor markets and consequently in economic growth and development. But, further empirical evidence needs to be developed in order to illustrate the major benefits from education in general and that of females in particular. More research on these issues is taking place but is still limited in quantity and quality. Empirical models are also to be in place so as to measure the effects of education on the incorporation of females in the workforce.

## **II. Empirical Investigations**

This part covers the data sources and the variables used in the analysis besides the descriptive statistics and the regressions conducted for both Arab and ECE countries.

### **1) Data sources and variables**

The data used are those from UNESCO, Barro & Lee (2010), and from the World Bank Data websites. The most important variables concerned include:

- Out-of-school rates for children of primary school age: This represents the percentage of children in primary school age who are not enrolled in primary school (either a public or private institution) provided by the UNESCO. These rates are available for female and male students.
- Out-of-school rates for children of lower secondary school age: These are the numbers provided for the UNESCO for children in age of lower secondary schooling who are not registered in any public nor private institution. Rates are provided for females, and males in Arab states in general and in a set of Arab countries.
- Effective transition rate to lower secondary: These numbers represent the percentage of students who once graduated from primary school

decides to go for secondary education and is from the UNESCO database.

- Survival rate to last grade of primary: Out of 100 students who started primary school, the number of students who graduate from it. These rates were from the UNESCO database.
- Unemployment rates: They represent the percentage of labor market that is looking for an occupation. These rates are for both men and women and were retrieved from the World Bank databank.
- Average years of schooling: This data was available on the Barro & Lee website for females and the total population. From these two sets of data, we computed the males' average years of schooling. This data represents the mean of formal studying received by people of a certain age group. We used 15 and plus to match the labor participation rate criterion.
- Labor participation rate: The percentage of people who are 15 years and older and is economically active. This data was available for male, female, and the total population data. This data was retrieved from the World Bank databank.

These datasets are used for both descriptive and regression analyzes needed to achieve the objectives of this paper.

## 2) Descriptive Statistics

The descriptive statistics analysis is respectively applied to Arab economies and ECE countries.

### a) Arab countries

In the Arab countries, the general trend is a decrease of out-of-school children for both genders at all education levels. Out-of-school rates for primary education for females have been dropping from 15.3% to 13.8% in the past four years (UNESCO Institute for Statistics, 2013). The situation for out of school rates for children of lower secondary school age is comparable to the primary school levels. As of 2011, there were 14.53% male out of school in comparison to 18.94% female in the Arab states (UNESCO Institute for Statistics, 2013). The same trend is prevalent in the fact that these numbers have been decreasing for the past years. However, while the

amount of decline of female out of school rate is nearly 4% over three years, the corresponding level for male is hardly 1%. This is in line with the findings of Dr. Nadine Sika who acknowledged the decrease of the gender gap in education in the Arab world (2011). Out-of-school rates for males and females are now closer than this was the case few years ago.

In tertiary institutions, the trend has been moving towards more schooling for women than men. Reverse gender gap has started to show up in some countries like Algeria where more women were enrolled in college than men. In 2011, the gross enrollment ratio in tertiary education for male was 22.9% while female rate was slightly higher with 23.43% (UNESCO Institute for Statistics, 2013). The situation was not the same in 1999 where the gross enrollment ratio for male was almost 4% higher than the one for female. Thus, the gender gap present twelve years earlier disappeared. Therefore, at all levels, women are more present in schools and statistics show a significant decrease in the gap between genders at school.

In a case-by-case analysis of Arab countries, the rates for Morocco, Algeria, and Palestine behave like the mean discussed above. Statistics for countries in the Gulf present some differences. In primary, and secondary school, countries like Lebanon, Qatar, or Saudi Arabia have equal to higher out of school rates for male than female (See Appendix C for more details). As for tertiary education, gender gap goes in the opposite direction since we see that gross enrollment rates for women are higher than men. An example is in Qatar where the enrollment rate is six times higher for females than males, reaching 30.7% versus 5.5% for females. One assumption behind these statistics may be that more men pursue their studies abroad than women.

When looking at data in relationship to the drop out rates, one can see that Arab states suffer from high dropout levels across primary, secondary, and higher education. In 2010, for most of the Arab countries, survival rate through last grade of primary school was somewhat higher for female than male. Survival rates for both genders have been increasing through time and reached similar level in the past years. On the other hand, in Yemen, the survival rate for female in primary school is only 68.03% while the one for male is 82.38% (UNESCO Institute for Statistics, 2013). Gender disparity in dropout rates is therefore still a problem in primary schools in some Arab countries.

**Table 1: Survival Rate to last year of primary for Arab States in 2010 (UNESCO Institute for Statistics, 2013)**

Country	Survival Rate to last year of primary male	Survival Rate to last year of primary female
Bahrain	97.40162	98.18224
Egypt	98.90675	98.80417
Algeria	94.01055	95.13255
Lebanon	87.53598	93.58065
Morocco	89.79586	89.01994
Syria	95.11822	96.2073
UAE	84.54929	84.34224

Once students graduate from primary schools, the decision to go through secondary schooling does not come as naturally as governments would like it to be. In 2010, in countries like Bahrain, the problem is nearly absent since 100% of male observed an effective transition to secondary schools for 99.92% for their female counterparties (UNESCO Institute for Statistics, 2013). In other parts of the Arab world, transition to upper classes is a real issue. Female transition rates are lower than male's in Algeria, Morocco, and Yemen but higher in Lebanon, United Arab Emirates, and Qatar (See Appendix B for details). The trend in these rates has been increasing but few countries have attained the desired 100%.

Moving on to drop out rates in secondary, the decreasing trend seems consistent with primary education. From the graduation ratio rates, we can see that more and more students complete their education with a higher percentage for female than male. In Jordan for instance, while 75.31% males completed secondary school in 2008, there were 82% females who did. In Qatar and Oman, completion rates are around 100% in secondary for both males and females (UNESCO Institute for Statistics, 2013). Hence, while for primary education one can see discrepancies with higher dropout rates for female, the situation changes for secondary education where higher dropout rates are observed for male. Furthermore, drop out rates in secondary schools are on average lower than the ones in primary.

Arab countries suffer from high dropout rates in tertiary education and the trend is similar to the secondary schooling one. In Dubai, dropout rates for tertiary education reach 22% for male and 14% for female aged between 20 and 24 (Dubai

Statistics Center's 2008 Labor Force Survey). In 2011 in Egypt, out of a 100 students that registered in higher education institutions, only 30% females graduated. The rate male's graduation ratio is even lower with 29.2% (UNESCO Institute for Statistics, 2013). Gross graduation rates at the higher education have the same increasing tendency for both males and females in all the Arab countries. As of 2011, even though graduation rates were relatively low in most Arab countries, they were similar for both genders.

The trend in unemployment rates for males and females has also been decreasing in the past seven years. However, rates for women are much higher than the equivalent ones for men. For instance, in Egypt, gross unemployment rates for females have gone from 24.2% in 2003 to 22.3% in 2010 (World Bank Data, 2013). These numbers were even lower in 2007 with 18.7% with the government initiative to hire more women at the time. Unemployment rates for males on the other hand reach considerably lower levels. They have dropped from 6.5% in 2003 to 4.9% in 2010 (World Bank Data, 2013). This confirms that even though females are participating in the workforce, unemployment rate is still higher for them than for males.

The labor participation rates for female have a changing tendency similar to the unemployment rates. They have been increasing for the past twenty years in all Arab countries. In Yemen, Jordan, and Algeria, these rates have gone up by more than 50%. In Qatar, the trend was not upward during the two decades but has seen a decline in the first half. On the other hand, labor participation rates for males have not particularly increased in the past twenty years. They have seen some slight variations through the years but not for more than 1% in all this time (World Bank Data, 2013). The rates are nonetheless much lower for females than males. In 2011, the rate of labor participation for female was barely 15% while the one for male was more than four times higher with a 71%. Female participation rates need yet to grow in order to attain similar levels as male. It comes with no surprise that the labor participation rates for the total population are going up as a result of the female higher participation.

Starting from 1950, the average year of schooling for female has been going up. The trend has become more pronounced starting 1970 (Barro & Lee Database, 2013). On average, it increases by one unit every five years. The increase in the average years of schooling for male is not as great. In fact, by 2010, there was almost no difference between that of females and the one of males. In Saudi Arabia, it was of

8.18 for female and 8.76 for male. The gender gap in this indicator has not disappeared in all Arab countries, but its magnitude has significantly decreased in the past years.

b) Central and Eastern Europe countries (CEE)

Out of school rates for primary level in CEE countries seemed to be constant in the past four years for both males and females. In 2008, the percentage of males out of school was 3.83%. In 2011, it was of 3.75% (UNESCO Institute for Statistics, 2013). The same trend is present in CEE countries for secondary level with rates around 6% since 2008 for both males and females (UNESCO Institute for Statistics, 2013). Enrollment rates in tertiary education are higher for female than male. In 2011, there were 75.79% female enrolled and 60.97% male in CEE higher education institutions (UNESCO Institute for Statistics, 2013). The corresponding rates in 2008 show a slow increasing trend through years with a higher slope for males than females. In comparison with Arab countries, out of school rates in CEE countries are much lower and enrollment rates in tertiary education are almost double what they are in the Arab region.

Dropout rates have been going down for primary school for both genders. In Albania, survival rates in primary school went up simultaneously for males and females. Female rates increased from 93.2 % in 2008 to 97.3% (UNESCO Institute for Statistics, 2013). In most CEE countries like Belarus, Croatia, Czech Republic, and Lithuania there is no gender gap in survival rates and they reach the high nineties for both boys and girls. This trend is found again for survival rates in upper classes. Survival rates in secondary school and higher education are also high and similar for women and men varying between 91% in Republic of Moldova and 98% in Serbia (UNESCO Institute for Statistics, 2013). Survival rates at all educational levels are higher in CEE countries than in the Arab world. CEE countries have already achieved gender equality in school attendance while Arab states are still struggling to make this happen.

There is no specific trend of unemployment rates for all CEE countries. While they have seen their numbers dropping until 2008, most of the countries have faced higher unemployment rates after that year. This phenomenon could be explained by the European leverage crisis they have faced in 2009. Nevertheless, gender disparity in unemployment rate is almost absent. As of 2011, there was no significant difference between unemployment rates for females and males. In Hungary for



instance, both unemployment rates for female and male were of 11% (UNESCO Institute for Statistics, 2013). This is a new distinction from Arab countries where the difference between male and female unemployment rates is more substantial.

Labor participation rates for females have been slightly decreasing since 1990. For some countries, it stayed constant but in others like Belarus, the rate has dropped by up to 10%. Male labor participation rates have not changed much in CEE countries since 1990. Belarus has also experienced a drop of 13% in male participation in the past twenty years but no other major drop was felt in any other country (The World Bank, 2013). In comparison, male participation rates are larger than female's. Just like for Arab countries, there is a gender gap in labor participation between men and women.

The average years of schooling for both males and females in CEE countries has seen an increase through time. In 1950, the gender gap in most CEE countries was of more or less a year. But as time passed by, this discrepancy was shrinking. By 2010, this gap was absent (Barro & Lee, 2013). This implies that the increase in the average years of schooling for female has grown faster than the one for male. In Ukraine, for instance, the average years of schooling for male went from 5.05% in 1950 to 11.18% in 2010 and from 3.95% to 11.03% for female. In contrast with Arab countries, this average is higher for both males and females.

### 3) Regression analysis

Using the female average years of schooling data from the Barro and Lee database and the labor participation rates from the World Bank database, the effect of the increase in women's education and their injection in the job market were investigated. One way to do so was to regress labor participation rate on the average years of schooling for women, men, and the total population and to compare the results accordingly. Since the Barro and Lee estimate is computed every 5 years, the idea was to go as back in time as possible to get a maximum number of data points. Data from the World Bank was only available starting 1990 so that was the first year used. Next, estimates for every five years up to 2010 were used.

#### a) Arab countries

The first country proceeded with was Algeria. In Algeria, running regression with female labor participation as the dependent variable and average years of schooling as the independent one gives a slope of 1.3 compared to 0.2 when done for the total population. Both these coefficient were statistically significant at the 5%

level. Hence, when female average years of schooling increase with 1 year, there is more than 1% females injected in the job market. On the other hand, if the average year of schooling for the whole population goes up by a year, it will only drive the labor participation by 0.2%. This could be interpreted as an evidence of the feminization of the workforce through education. Gaining in women's education leads to a gain in the percentage of women participating in the labor market. The same regression on male only confirms this hypothesis since the coefficient is not statistically significant at the 5% level.

The second country studied was Morocco. In Morocco, the average year of schooling does not seem to be statistically significant for female labor participation at the 5% level. Moreover, the coefficient is negative (-0.2). When running the same regression for the total population, the coefficient is not significant either. In magnitude, it is even larger than the one for females. In fact, the more years on average people study, the less they go for the labor market. The regression on male does lead to a significant coefficient under 5 % probability. Unsurprisingly, this coefficient is negative (-2.51) and implies less labor market participation as the average schooling years goes up. A large informal market going on in the region could explain this. Morocco is one of the countries with the highest informal labor market (Angel-Urdinola & Tanabe, 2012). Thus, the official labor participation rates do not represent the entire working class. Another reason could be that this average only increases by the same population who was accessing school in the first place. In other words, there are not more educated people but the percentage of people who used to go to school has increased its number of years in the education system.

In order to obtain a more diversified result, the test was performed on two Middle Eastern countries: Saudi Arabia and Jordan. In these two countries, just like in Algeria, the average years of schooling seems to be significant in explaining the increase in labor participation of female. Its coefficient is of 0.7 in Saudi Arabia and of 1.49 in Jordan, which correspond to an increase in the labor market through education. On the other hand, the coefficients for the total population in the two countries do not appear to be statistically significant at the 5% level. This second finding could be explained by less percentage of males participating in the labor force through education. Once running the same test for males, it appears that the coefficients are both negative and not statistically significant at 5 % level. One reason could be that the percentage of males in the labor market was already high enough in

1990 (around 75% in Saudi Arabia and 68% in Jordan) and had little chance of seeing any growth in the future. Therefore, in Saudi Arabia and Jordan, females are injected to the job market through education but we cannot advance the same conclusion for males.

The next country to analyze was the United Arab Emirates. The results from these regressions were similar to the ones in Algeria where the coefficient was significant for both female and total population but rejected for male regressions at the 5% level. The coefficient for female average years of schooling was of 4.5, which is one of the largest among the countries studied. The labor participation for male was also one of the highest with an average of 92%. The significance of average years of schooling for the total population participation in labor was driven by the female injection to the job market through the education process (See Appendix D for more details on the regressions coefficients and statistics).

The last country to look at was Qatar. The reason behind this choice is that unlike other Arab countries, Qatar did not have the same increasing tendency in female labor participation rates through the entire time period chosen (See Appendix E for more details). Qatar's rates have been decreasing during the first decade before spiking up during the second one. Overall, the participation rates were the highest in the Arab region. In magnitude, they are as high as CEE countries'. Once running the regressions, the results were different from the rest of the group. The female coefficient was pretty high even though it is rejected at the 5% level. It is of 3.33 implying that when the average years of schooling increases by a year, the labor participation rate increases by 3.33%. For males, the coefficient was 10 times lower and insignificant as well. The total population regression does not lead to a significant result either.

From the results of these tests, we can conclude that it would be hard to draw a single conclusion on all Arab countries. Other than in Morocco, the regression results refute the findings of the report on the MENA paradox that claims that investment in education has not yet started showing in the job market (The World Bank, 2012). Another set of interesting regressions to perform would be using the log of the data to obtain the elasticity and to use the square of the independent variable to investigate the presence of any U-shaped relationship.

- Log Regressions

Country	Gender	Coefficient	t-statistics
Algeria	Male	-0.117	-1.16
	Female	0.549	9.99
	Total	0.036	0.62
Morocco	Male	-0.15	-3.27
	Female	-0.009	-0.09
	Total	-0.112	-1.94
Saudi Arabia	Male	-0.031	-3.25
	Female	0.302	3.02
	Total	-0.202	-1.89
Jordan	Male	0.013	0.093
	Female	0.91	3.58
	Total	0.11	0.99
United Arab Emirates	Male	0.025	2.30
	Female	1.11	7.10
	Total	0.18	6.24
Qatar	Male	0.018	0.26
	Female	0.48	1.20
	Total	0.16	0.82

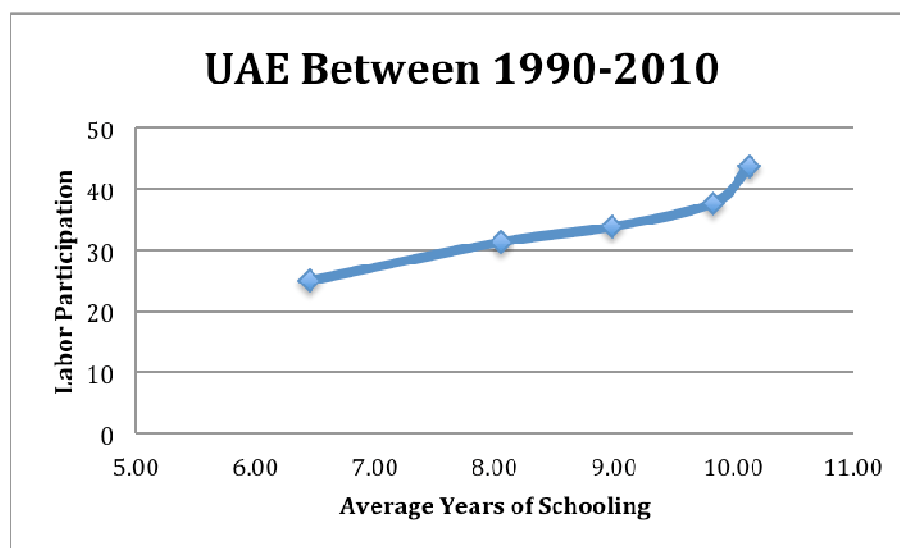
The numbers in this table represent the percentage change in labor market relative to a percentage change in average years of schooling. The highest elasticity for female regressions is the UAE's followed by Jordan. This means that an increase of 1% in the average years of schooling could lead to an increase of more than 1% of female participation in the job market. The UAE have invested tremendous amounts of money and efforts in improving the education system and it translated into higher average years at schools, leading to an increase in women's labor participation. Male regressions were mostly insignificant and do not tell much about the effect of an increase in the average years of schooling on the labor participation.

- Square regression

The intuition behind the square regression is the U-shape relationship between education and labor participation. The theory behind such a trend is that women with no to low education highly participate in the workforce through low wages positions such as agricultural work. This class of women usually works by necessity. On the

other hand, highly educated women have fewer barriers to participating in the labor market. They also have better salaries that make the job market attractive for them. In between, women with average education face all the struggles discussed in previous sections of the paper. Therefore, the shape of labor participation versus education level should look like a smile rather than a straight line (Klasen and Pieters, 2012).

When plotting graphs of labor participation in terms of average year of schooling for several Arab countries, a slight U-shape is noticeable for females. It is sometimes only present in a time interval. An example is the case of the United Arab Emirates:



The following table contains the results of the squared regression on the selected countries:

Country	Gender	Coefficient	T statistics
Algeria	Male	-0.10	-1.41
	Female	0.12	11.83
	Total	0.013	0.37
Morocco	Male	-0.26	-4.74
	Female	-0.066	-0.44
	Total	-0.21	-2.72
Saudi Arabia	Male	-0.199	-2.71
	Female	0.06	4.55
	Total	-0.097	-1.64
Jordan	Male	-0.0003	-0.036
	Female	2.49	3.29

	Total	0.0024	0.79
UAE	Male	0.0207	1.99
	Female	18.45	6.75
	Total	0.019	7.80
Qatar	Male	0.027	0.33
	Female	0.238	1.48
	Total	0.18	0.99

Running regressions using the square of the independent variables only shows quadratic relationship in cases where a linear one was previously proved. Therefore a U-shaped type of association between labor market and education is present in some cases. A more accurate observation is that this relationship is mainly associated with females. In Morocco, the U-shaped trend was prevalent for males since the coefficient is both significant and negative. Just like for the simple linear regressions, the largest coefficients are associated with the UAE followed by Jordan.

b) CEE countries

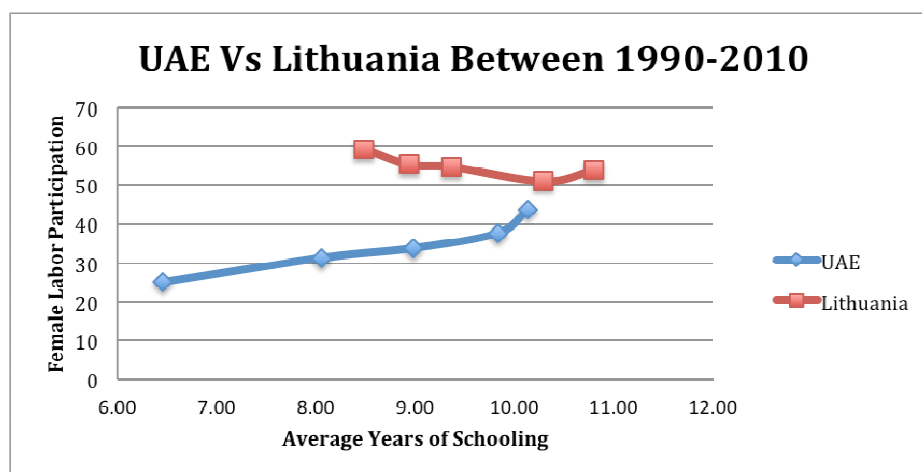
A simple linear regression was ran of five CEE countries:

Country	Gender	Coefficient	T statistics
Ukraine	Male	-4.80	-2.92
	Female	-1.79	-2.15
	Total	-0.04	-3.47
Lithuania	Male	-0.058	-3.41
	Female	-2.5	-2.30
	Total	-2.83	-2.50
Czech Republic	Male	-1.03	-1.96
	Female	-0.86	-1.20
	Total	-0.78	-1.23
Hungary	Male	-2.73	-4.66
	Female	-1.46	-1.11
	Total	0.0024	-1.52
Albania	Male	-1.04	-2.13
	Female	-1.99	-10.55
	Total	-1.32	-4.47

From this table of regressions, one can see that almost all the coefficients were negative. Therefore an increase in the average years of schooling actually leads to a decrease in labor market participation. However, this decrease in labor participation might just be the result of the European crisis in the past years. Because of the hard economic environment, less people were tempted by the formal labor market and thus explain the decrease in participation despite the changes in average years of schooling. Furthermore, most of these coefficients were not statistically significant at the 5% level and cannot be treated as explanatory. In other words, in CEE countries, the explanatory power of average years of schooling over participation may be too low to be taken into account.

In comparison with the Arab world, the participation rates in CEE countries were significantly higher. Therefore, these countries have possibly already reached a stage (that Arab countries have not reached yet) where we can see a backward phenomenon. The labor market in CEE countries may be at a point where an increase in participation of either gender is not needed. This could be argued by examining the relationship between labor participation and economic development. Once the labor market is saturated, even if education levels are rising, the participation would decrease. Next, Maybe CEE countries have lived the injection of females through education in an earlier era. There is no data available to test this hypothesis but it is a reasonable assumption to make. Finally, population ageing might be another reason for the decrease of labor participation. Perhaps the decrease of labor participation is simply due to retirement of workers. The descriptive analysis of the current data corroborates the previous statements. While participation rates in Arab countries over the period studied were increasing, the ones CEE countries were constant to decreasing in some countries. Hence, the two regions were not in the same situation in the past twenty years.

A last comparison to make is in the shape of the graph of female labor participation versus average years of schooling. In fact, while the one for Arab countries (here the UAE are used as an example) could be interpreted as linear, the one for CEE countries is far from being so (using Lithuania as an example). This non-linearity could also be the reason for the insignificance of the coefficients in the regressions presented previously. This result is also present in the case of Qatar where the non linearity of the graph led to insignificant coefficients.



In this example, while the graph for the UAE seems to follow a consistent increasing trend, the one for Lithuania goes up and down. The UAE are also the country with the second highest rate of female labor participation in the Arab world (after Qatar) is still behind Lithuania which does not hold the same position among CEE countries.

These empirical results show some distinctions between male and female in Arab economies but also discrepancies between Arab and CEE countries. There could be several reasons behind these differences. Moreover, there are numerous implications to be drawn and are discussed below.

### III. Discussion

Giving the current economic situation of the Arab world, the feminization of the job market is progressing and is not a choice. In order to develop their economies, Arab countries need to enhance the contribution of their human resources with the involvement of more women. But as labor markets require skilled human resources, both public and private sectors in Arab economies increasingly need educated women. This is why education is gradually becoming the most important mean for the promotion of more females in accessing labor markets. In the present research, the average schooling years of Barro and Lee (2010) is used as a proxy for the educational level. The effect of its change on labor participation shows how feminization is induced by education. While education positively contributes to increasing labor participation for females in the Arab countries, it did not seem to be significant in the case of Central and Eastern European economies (CEE). This could be explained by the fact that the feminization process of Arab countries is more recent



than that of CEE. Indeed, CEE countries do not suffer from gender gap in education anymore. They have also reached similar levels of labor participation for males and females. Thus, it is reasonable to assume that they have already lived feminization of their job market at an earlier age.

However, the feminization process of Arab countries does not seem to be fast enough since gender gap is still present between participation rates for males and females. Even with lower dropout rates and higher at-school rates for women, labor participation rates are considerably different between men and women. Unemployment rates are also larger for females than males. Consequently, reforms should be implemented to solve for these discrepancies between the two genders in education and employment. These reforms should be in legal and social areas. Society and government, for a better integration of female in the job market, should make efforts. Such initiatives have started emerging in some countries. A quota for females in the parliament has been established in Iraq and Jordan for instance (The World Bank, 2012). This would ensure a minimum female participation in the political sphere. If the Arab region continues on the right path, Arab women should, one day, be as numerous in the workplace as their male pairs.

Finally, the rates at which this feminization process is being achieved are quite different from a country to another. Whether this difference is due to the quality of local education or the geographical position needs further investigation. Thus, other Arab countries could benefit from the UAE's success in inserting a high percentage of women in the job market through education and try a similar strategy in forming and hiring females. The difference between Arab countries feminization rate could also be due to the economic development of each country.

## **Conclusion**

While looking at rising participation rates for Arab women in the job market, the question is whether females enter the workforce through receiving an appropriate education to better assess the role of education in the feminization of labor markets, or through some other process. First, the trends in female schooling and dropout rates were to be observed to better see the yield of each educational stage. Second, moving on from an educational level to another, the eventual gender gaps in both educational yields and losses are analyzed to better perceive the gaps in different economies and areas. Lastly, the focus was on the changes in the participation of women to the job

markets in comparison to men and to the total population. In order to provide a comparison on this phenomenon, statistical tests are performed on similar matters pertaining to Central and Eastern Europe.

The trends in out-of-school rates in the past years have been decreasing for both males and females in the Arab world. More children are now attending schools and the gender gap has even disappeared in some countries. These higher rates have translated into higher average years of schooling for both Arab males and females. Similarly, dropout rates have been sinking simultaneously. However, dropouts are still more important in primary and tertiary education than in secondary for Gulf countries but remain higher also in secondary education for the North-African economies. Female labor participation has been going up when male participation did not seem to change notably in the past twenty years. Nonetheless, while unemployment rates have seen an improvement in the past decades, females still suffer from higher rates than males. In contrast, in CEE countries, no gender gap was detected at any level of education or employment. The trend in the past years was also different than the one in Arab countries. No increase in labor participation or education was detected. Rates were high enough to remain constant through time.

Statistically, feminization of the job market through education is highly significant in Arab countries. The average years of schooling index was used in a regression to explain the changes in participation rates. It turned out to have a positive coefficient and be significant in most of the countries tested for: Jordan, Saudi Arabia, Algeria, and the UAE. The only exceptions were for Morocco and Qatar. Some authors relate that to the existence of more accentuated informalities in the labor markets. Angel Urdinola and Tanabe (2012) show that Morocco suffers from a large informal sector, which makes its participation rates less accurate. On the other hand, changes in labor participation rates in Qatar were not parallel to the changes in participation in the rest of the Arab world and are not representative of the Arab economies. Hence, it is reasonable to overlook the tests for Morocco and Qatar. From the results of the other countries' regressions, it can be concluded that the insertion of women in the labor market happens through an increase in their schooling years. Comparing these results to males' showed that male coefficients were negative and non significant. One interpretation could be that the average years of schooling was not sufficient in explaining the changes in males' labor participation rates.

The second part of the study was about comparing these results to the ones obtained from running the same tests on CEE countries. Regressions in CEE countries showed little to no significance of average years of schooling on labor participation. The coefficients of the five countries studied were negative. Several reasons could be behind the lack of explanatory power of these regressions. Mainly the fact that markets are saturated since labor participation rates is already high enough. Ageing of the working class and economic crisis could also be playing their role in these results. The comparison between Arab and the CEE countries mainly shows that these two regions are at different stages of the feminization process. While in some Arab countries labor participation rates for females are barely 15% (like Algeria), labor participation rates in the ECE countries are around 50% or more.

Arab countries have realized the importance of involving women in the labor market. They seem to have started their insertion through education and positive results have already translated into increasing rates. This new politics of reducing gender disparities should stay in place and be reinforced in order to reach the same results CEE countries have reached. Females' future is undoubtedly to be part of the Arab workforce.

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## Appendices

### Appendix A

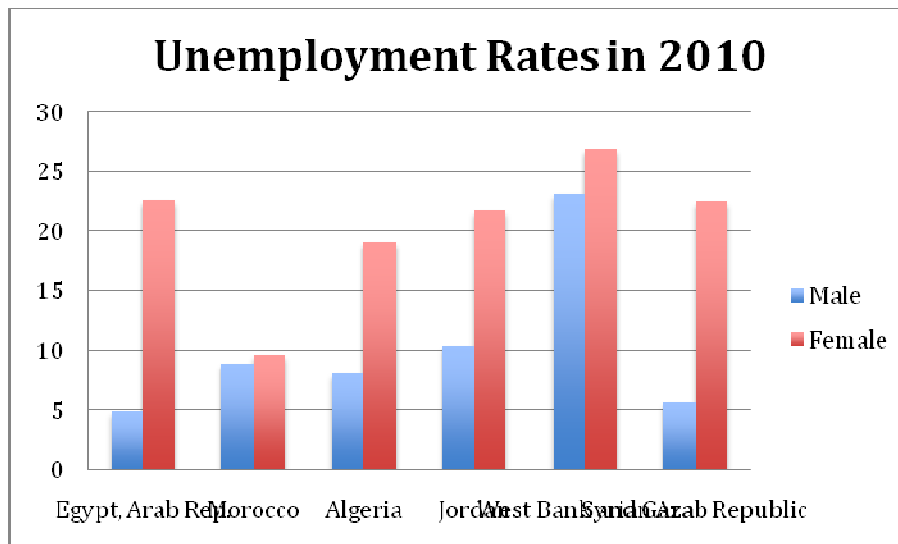


Figure 1: Data from the World Bank

## Appendix B

**Table 2: Effective Transition Rates to Lower Secondary by Gender (UNESCO, Institute for Statistics, 2013)**

COUNTRY	Effective transition rate to lower secondary (%) Male 2010	Effective transition rate to lower secondary (%) Female 2010
Algeria	100	97.06229
Bahrain	100	99.92072
Lebanon	93.58945	96.70027
Morocco	91.94356	84.51799
Palestine	94.73775	100
Qatar	99.9499	100
Syrian Arab Republic	98.72956	98.27506
United Arab Emirates	91.77475	100
Yemen	93.28828	87.77918



## Appendix C

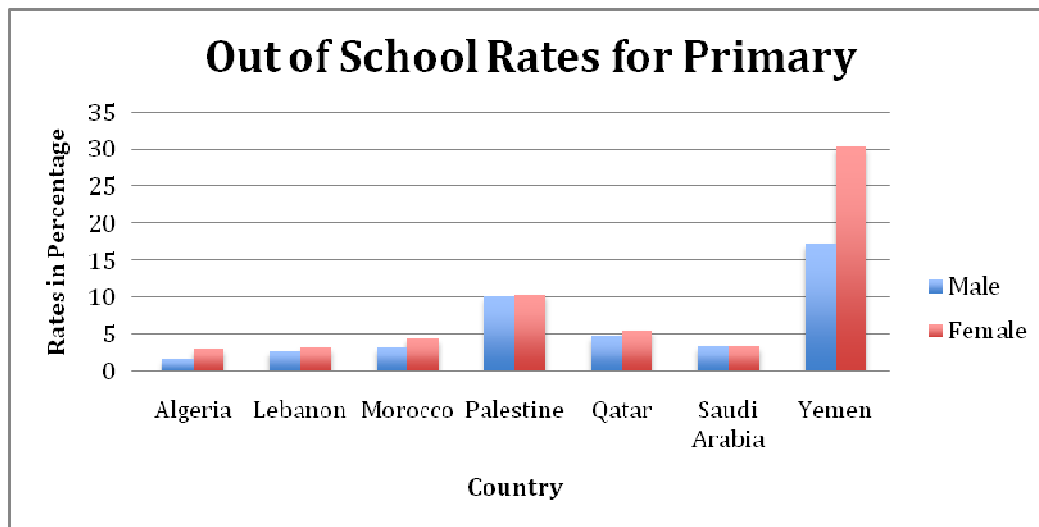


Figure 2: Data from UNESCO Institute for Statistics

## Appendix D

Country	Gender	Coefficient	T stats
Algeria	Male	-1.33	-1.28
	Female	0.549	10.57
	Total	0.036	0.48
Morocco	Male	-0.2	-3.93
	Female	-0.25	-0.26
	Total	-1.60	-2.22
Saudi Arabia	Male	-3.16	-2.96
	Female	0.79	2.54
	Total	-1.44	-1.79
Jordan	Male	0.029	0.026
	Female	1.49	3.38
	Total	0.52	0.87
United Arab Emirates	Male	0.31	2.14
	Female	4.50	5.92
	Total	1.92	6.83
Qatar	Male	0.31	0.30
	Female	3.33	1.37
	Total	2.23	0.92

## Appendix E

